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# Freight and Logistics E-News November 2009 (Vol. 7, No. 2)

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## 13th annual Freight and Logistics Symposium scheduled for Dec. 4

### Symposium to explore transportation-related aspects of economic recovery

Severe economic recessions don't happen often. When the recovery begins in earnest, the business landscape could look quite different. The core challenges for the freight transportation, logistics, and manufacturing industries will come blazing back. These challenges include modal capacity, energy, the environment, and sourcing strategies, and they all need to be addressed to manage the transportation-related aspects of economic recovery.

The 13th annual CTS Freight and Logistics Symposium, titled "Views of the System After Economic Recovery," will explore these issues on December 4, 2009, at the Ramada Plaza Hotel in Minneapolis. Representatives from the business community, academia, and the public sector will discuss trends and what to expect when business picks up again as well as the infrastructure, policy, and practice changes needed with economic recovery. Two panel presentations will focus on a big-picture perspective as well as implications for Minnesota, a look at the possible post-recovery freight system, the role of the public, lessons learned from other successful inland ports, and how federal policy and funding could affect the freight system once the economy begins to recover.

Register online and visit the event Web page for more information. You may also contact Sara Van Essendelft, 612-624-3708, cceconf5 @umn.edu.

### U of M study of truckers finds those with higher IQs make wiser economic choices

*Greater cognitive ability leads to greater patience, more calculated risk taking, more cooperativeness, and greater job success*

People with higher measures of cognitive ability are more likely to make good choices in several different types of economic decisions, according to University of Minnesota researchers studying turnover among truck drivers.

Since turnover among truck drivers is a huge cost and retention concern for some of the biggest trucking companies in the country, the researchers sought to identify the factors that predict productivity, retention, and other on-the-job outcomes for truckers.

The findings, published online in the *Proceedings of the National Academy of Sciences* (May 12, 2009, Volume 106, Issue 19, pages 7745-7750), resulted from a study conducted with 1,000 trainee truck drivers at Schneider National, Inc., an American motor carrier employing 20,000. The researchers measured the trainees' cognitive skills and asked them to make choices in several economic experiments, and then followed them on the job.

People with better cognitive skills, in particular higher IQ, were more willing to take calculated risks and to save their money and made more consistent choices. They were also more likely to be cooperative in a strategic situation and exhibited higher "social awareness" in that they more accurately forecasted others' behavior.

The researchers also tracked how trainees persevered on their new job. The company paid for the training of those who stayed a year, but those who left early owed thousands in training costs. The study found that those with the highest level of cognitive ability stayed at twice the rate of those with the lowest.

The finding that individual characteristics that improve economic success—patience, risk taking, and effective social

behavior—all cluster together and are linked through cognitive skill could have implications for policymaking and education.

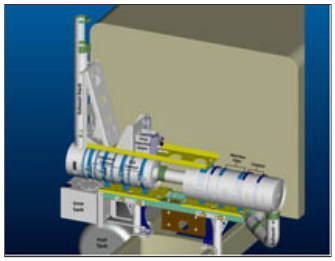
“These results could shed light on the causes of differential economic success among individuals and among nations,” said University of Minnesota Twin Cities economist Aldo Rustichini, a co-author whose theoretical work on cognitive skills is used in the paper.

“It also suggests that the benefit from early childhood education programs not only affects cognitive skills, but extends to more effective economic decision making,” said study co-author Stephen Burks, the University of Minnesota Morris economist who organized the project that gathered the data.

*Related resources*:

- “Cognitive skills affect economic preferences, strategic behavior, and job attachment,” *Proceedings of the National Academy of Sciences* (May 12, 2009) (524 KB PDF)
- Truckers & Turnover Project Web site
- “Study examines high driver turnover in $96 billion trucking industry,” *Freight and Logistics E-News* (November 2007)

## On-road evaluation of 2010 compliant diesel-emission control system



SCRT exhaust-emissions control system

Professor David Kittelson, director of the University of Minnesota Center for Diesel Research and the Power and Propulsion Laboratory in the Department of Mechanical Engineering, and his research team are conducting an on-road evaluation of Johnson Matthey’s four-way SCRT® exhaust-emissions control system. This system is a combination of a previously evaluated Continuously Regenerating Trap (CRT®) that reduces particulate matter (PM) and a selective catalytic regeneration (SCR) catalyst that reduces oxides of nitrogen emissions (NOx). The SCRT was developed to meet the Environmental Protection Agency’s 2010 heavy-duty truck emission standards and diesel fleet standards.

In 2002, the University of Minnesota began an on-road research program focusing on the effects of sulfur in fuel and lubrication oil on particle emissions. The researchers are particularly interested in nanoparticle emissions—particles less than 50 millionths of a meter in size. Within the health community, there is concern over the environmental impact and toxicity of these tiny particles.

The SCRT retrofit system was installed on the Mobile Emissions Laboratory, a specially equipped Volvo tractor powered by an emissions-year 2000, six cylinder, 12-liter engine rated at 287 kW. Samples are collected by continuously collecting exhaust gas directly from the exhaust stack and alternating between sampling from a probe mounted above the tractor cab and a second probe mounted at the rear of the laboratory. By alternating between the front and rear probes that collect on-road, background, and diluted exhaust, respectively, and continuously collecting exhaust samples from the exhaust stack, the real-world dilution ratio and particle concentrations are determined. Typical dilution ratios range from 150:1 to 400:1 while the mobile lab is traveling at 105 km/hr. The evaluation is being conducted using diesel fuel purchased at the pump that contains 5 percent biodiesel.

The SCRT system consists of an oxidation catalyst, a diesel particulate wall flow filter, urea injection system, an SCR catalyst, another oxidation catalyst, and a urea tank. The system is mounted behind the tractor cab. Urea is used to reduce NOx emissions. The exhaust first flows through the CRT to reduce carbon monoxide (CO), hydrocarbons (HC), and PM. A controlled amount of urea is injected before the exhaust enters the SCR catalyst where it is converted to ammonia, which acts as a reducing agent to remove NOx. A second catalyst is used to remove any excess ammonia. Urea is relatively non-toxic and is widely used as fertilizer. For the SCRT system to be widely used in the United States, a distribution network for urea will be required. Normally, the urea tank would require filling about as often as the fuel tanks.

Preliminary results obtained from over 8,000 km of on-road evaluation suggest that the SCRT system reduces PM emissions by more than 95 percent and NOx emissions between 50 and 60 percent. The system has not caused any interface problems with the Volvo tractor. Testing will be completed in the fall of 2009. Further information on the on-road test procedure and past results is available at the Center for Diesel Research.

*Related resources*:

- University of Minnesota Center for Diesel Research
- University of Minnesota Mobile Emissions Laboratory

## Council of Supply Chain Management Professionals Twin Cities Roundtable upcoming events

**November 19** Lunch Meeting: Minnesota’s Economic Overview 11:30 a.m.–1:30 p.m. Radisson Hotel Roseville 2540 North Cleveland Ave. Roseville, MN 55113 Speaker: Neal Young, Minnesota Department of Employment and Economic Development

Please visit the Minnesota Council of Supply Chain Management Professionals Twin Cities Roundtable online for more information about upcoming events.

## Transportation Club Expo scheduled for March 23, 2010

The Transportation Club 2010 Expo and Luncheon will be held on March 23, 2010, at the Ramada Mall of America, 2300 E. American Boulevard, Bloomington, Minnesota. Luncheon cost: $40 ($45 non-members). The expo, the largest transportation exhibition in the United States with more than 80 exhibitors, follows the luncheon and is free. Find registration and more information online, or contact the Transportation Club at 952-239-1226 or office@transportationclub.com.

## FHWA 'Talking Freight' seminars

Upcoming topics and dates for the "Talking Freight" online seminars from the Federal Highway Administration (FHWA) are listed here. See the Talking Freight Web site for further details.

**November 18, 2009** Security and System Resiliency 1:00 p.m. – 2:30 p.m. EST

**December 16, 2009** Freight Fee Structures 1:00 p.m. – 2:30 p.m. EST

## More news and information

- The U.S. Federal Highway Administration (FHWA) Office of Freight Management and Operations updated its Web site this month. The new site is organized around key freight topic areas to meet users' needs and make information easier to find.
- The USDOT Federal Motor Carrier Safety Administration has published a report Driver Distraction in Commercial Vehicle Operations (September 2009) exploring the effect of driver distraction in commercial motor-vehicle operations.
- Recently published freight-related research from the Transportation Research Board (TRB): National Cooperative Freight Research Program (NCFRP) Report 1: Public and Private Sector Interdependence in Freight Transportation Markets is designed as a primer on relationships between public sector and private sector stakeholders in the freight transportation industry. The report explores the freight industry through the use of examples, case studies, and a broad-based examination of the mutually dependent issues facing public and private investment decision makers.

### Comments

We would like to hear what you think of CTS Freight & Logistics E-News. Please respond to this message or e-mail us at cts@umn.edu.

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